SLR-VO – 5

Seat No.	

M.Sc. (Part – I) (Semester – II) Examination, 2014
(New C.G.P.A. Pattern)
MICROBIOLOGY (Paper – V)
Microbial Genetics

Day and Date : Tuesday, 22-4-2014 Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

N.B. *: 1) Part – **I** question **1** is **compulsory**.*
*2) Attempt **any four** questions from Part – **II**.*
*3) Figures to the **right** indicates **full** marks.*
*4) Answer to the **two** Parts should be written in the **same** answer book.*

PART – I

1. Rewrite the sentences after choosing the correct answer from the given alternatives. **14**

1) In A form of DNA, one turn of helix consists of _____ base pairs.
   a) 10 b) 11 c) 9.33 d) 8

2) Ovalbumin gene in chickens is an example of _____
   a) Satellite DNA b) Split gene
   c) Palindromic DNA d) Relaxed DNA

3) One cistron one polypeptide hypothesis was developed by _____
   a) Beadle and Tatum b) Ochoa
   c) Lederberg d) Delbruck

4) Mendel for his experimental work used _____ plan.
   a) Groundnut b) Garden pea
   c) French bean d) Soyabean

5) Amplification of plasmids is carried out by _____
   a) Penicillin b) Streptomycin
   c) Chloramphenicol d) Tetracyclin

6) In folded fiber model of *E.coli* chromosome, DNA folds are held by _____
   a) DNA b) RNA
   c) Proteins d) Enzymes
7) Transposon Tn3 carries gene for _____ resistance.
   a) Tetracyclin b) Ampicillin
   c) Penicillin d) Chloramphenicol
8) Photo-reactivation is used to repair _____ types of damage.
   a) Double stranded breaks
   b) Single stranded breaks
   c) T-T Dimmers
   d) Point mutation
9) _____ sponsors conjugation in bacteria.
   a) F plasmid b) R plasmid
   c) Chromosomal DNA d) Ti plasmid
10) _____ is the initiation codon during translation.
   a) AUG b) UUU
   c) UAG d) CCC
11) _____ is the initiator t-RNA in protein synthesis.
   a) t-Met-$tRNA_t$ b) a-Met-$tRNA_a$
   c) v-Met-$tRNA_v$ d) f-Met-$tRNA_f$
12) Peptidyl t-RNA occupies _____ site in the ribosome.
   a) A b) E c) P d) Q
13) _____ is the transforming principle taken up by bacteria in Griffith's experiment.
   a) RNA b) Polypeptide
   c) Carbohydrate d) DNA
14) _____ causes point mutation in genome.
   a) EMS b) UV radiation
   c) Gamma radiation d) Visible light

PART – II

2. Explain the roles of different enzymes involved in the *E.coli* DNA replication. **14**

3. Discuss in detail the process of transcription in prokaryotic organisms. **14**

4. Explain types, properties and mechanism of transposition of transposable element. **14**

5. Attempt **any two** of the following : **14**

   a) Explain the technique and applications of PCR.

   b) Justify the statement "The genetic code is deciphering."

   c) Describe operon model with reference to lactose operon.

6. Write short notes on **any two** of the following : **14**

   a) Alternative forms of DNA

   b) Overlapping genes

   c) LCR.

SLR-VO – 12

Seat No.	

M.Sc. (Semester – III) Examination, 2014
MICROBIOLOGY
Paper – XII : Food and Dairy Microbiology

Day and Date : Monday, 28-4-2014 Max Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1) Part – **I** question **1** is **compulsory**.*
*2) Attempt **any four** questions from Part – **II**.*
*3) Figures to the **right** indicate marks.*
*4) Answer to the **two** Parts should be written in the **same** answer book.*

PART – I

1. Rewrite the following sentences by selecting the correct answer from given alternatives : **20**

i) Ropiness in milk is mainly caused by _____
   a) Saccharomyces cerevisiae b) Alcaligenes viscolactis
   c) Geotrichum candidum d) Proteus vulgaris

ii) The production of blue discolouration in milk by pseudomonas syncyanea is possible only in association with _____
   a) S. aureus b) Cl. botulinum
   c) S. lactis d) Penicillium

iii) Streptococcus agalactia is associated with _____
   a) Mastitis b) Sore throat c) Scarlet fever d) Listeriosis

iv) Milk serum is milk plasma minus _____
   a) Calcium b) Casein micelles
   c) Water d) Lactose

v) Rancidity of cream is due to the breakdown of _____ in cream.
   a) Lactose b) Fats
   c) Carbohydrates d) Proteins

vi) _____ discolouration in both cream and butter is caused by pseudomonas nigrifaciens.

a) Black b) Brown c) Blue d) Yellow

vii) The ripening of cream _____ the churning time during butter making.

a) Reduces b) Inhances c) Increases d) Maintain

viii) Homogenization _____ the bacterial count of ice cream mix.

a) Decreases b) Increases c) Maintain d) Reduces

ix) The main end products produced in milk as a result of fermentation by leuconostocs are lactose, acetate and _____

a) O_2 b) CO c) CO_2 d) Methane

x) The alcohol content in kumiss ranges from _____ %.

a) 3 to 5 b) 6 to 8 c) 9 to 11 d) 1 to 2

xi) _____ ions are essential for the proliferation of phages in lactic acid bacteria.

a) Mn b) Ca c) Zn d) Mg

xii) _____ was the first person to correlate the cheese maturation with bacterial activity.

a) Pasteur b) Koch c) Cohn d) Metchnikoff

xiii) The late blowing in processed cheese is due to _____

a) Clostridia b) Leuconostoc

c) Penicillium d) Pseudomonas

xiv) Brevibacterium lines is member of starter used for _____ type of cheese manufacturing.

a) Brick b) Swiss c) Blue d) Cheddar

xv) Dahi provides an unfavorable medium for the proliferation of pathogens due to _____ environment.

a) Salty b) Acidic c) Neutral d) Alkaline

xvi) _____ is the most common contaminants in dahi.

a) Penicillium b) Lactobacilli c) Yeast d) Coliforms

xvii) Food poisoning from Khoa is due to heat stable toxin produced by _____

a) Streptococcus lactis b) Enterobacter
c) Salmonella d) S. aureus

xviii) Acetaldehyde is the major flavour compound in _____

a) Kefir b) Yoghurt c) Kumiss d) Cheese

xix) _____ is a popular hard-pressed cheese variety which is ripened for 3 to 12 months.

a) Cottage b) Brick c) Cheddar d) Blue

xx) Chemically the typical aroma of butter consist of _____ as the major factor.

a) Diacetyl b) CO_2 c) NO_2 d) Aldehyde

PART – II

Attempt **any four** questions :

2. Describe in detail quality control and safety assurance in dairy industry. **20**

3. Write on essay on bacterial food born infections. **20**

4. Write an essay on spoilage of milk products. **20**

5. Write short answers **(any two)** : **20**

a) Explain food as substrate for microorganisms.

b) What are the principles of food preservation ? Explain food preservation by irradiation.

c) Explain manufacture of Swiss Cheese.

6 Write short notes on **(any four)** : **20**

a) Standardization of food products and casting

b) Kefir

c) Mastitis and Brucella test

d) Antibiotics in food preservation

e) Canned foods

f) Microbial spoilage of fruits and vegetables.

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SLR-VO – 13

Seat No.	

M.Sc. (Semester – IV) Examination, 2014
MICROBIOLOGY (Paper No. – XIII)
Immunology and Immuno-Technology

Day and Date : Tuesday, 22-4-2014 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Part – **I**, Question **1** is **compulsory**.*
*2) Attempt **any four (4)** questions from Part – **II**.*
*3) Figures to **right** indicate **full** marks.*
*4) Answers to Part – **I** and Part – **II** are to be written in **same** answer booklet only.*

PART – I

1. Rewrite the sentences after choosing correct answer from the given alternatives. **20**

i) Mast cells and basophils _____
   a) are phagocytic
   b) circulate in the blood stream
   c) are found in lymph nodes
   d) release histamine

ii) T-suppressor cells carry _____ molecules as its specific marker.
   a) CD4 b) CD8
   c) CD9 d) CD3

iii) Autoantibodies against acetyl-choline receptors are produced in _____
   a) Rheumatoid arthritis b) Myasthenia gravis
   c) Good pasture's syndrome d) Pernicious anaemia

P.T.O.

iv) Cytokines _____
   a) are lymphokines
   b) are monokines
   c) help to control and regulate immune response
   d) all of these

v) IgE is produced by _____ cells.
   a) Mast cells b) T cells
   c) B cells d) Macrophage

vi) Anaphylaxis is an example of _____ hypersensitive reaction.
   a) Type I b) Type – II
   c) Type – III d) Type IV

vii) Activated B lymphocyte differ antigenic stimulus get differentiated in to _____
   a) plasma and memory cells
   b) plasma and CD4 cells
   c) NK and plasma cells
   d) NK and memory cells

viii) The MHC is a collection of genes located on chromosome No. _____ in humans
   a) 15 b) 17
   c) 6 d) None of these

ix) IgG is produced by _____ cells.
   a) Macrophage b) T cells
   c) B cells d) Mast cells

x) _____ disease can be diagnosed by HLA B27 by flowcytometry.
   a) Type I diabetes b) Graves disease
   c) Alkylosing spondilitis d) Systemic lupus erythematosus

xi) In an autoimmune disease pernicious anaemia, antibodies are produced against _____
   a) folic acid b) vitamin B12
   c) intrinsic factor d) none of these

xii) Immunity mediated by antibodies produced in the human or body fluids such as plasma or lymph is known as _____ immunity.

a) Cell mediated b) Humoral

c) Natural active d) Artificial active

xiii) Treatment of autoimmune disease includes

a) Metabolic control b) Use of anti-inflammatory drugs

c) Use of immunosuppressive drugs d) All of these

xiv) Graves' disease is also called _____

a) Thyrotoxicosis b) Adison's disease

c) Pernicious anaemia d) Hashimoto's disease

xv) The process of opsonisation is done by _____

a) heat stable opsonins b) heat labile opsonins

c) both a) and b) d) None of these

xvi) Humoral immunity protects the body from _____ pathogenic agents.

a) Intracellular b) Extracellular

c) Both a) and b) d) None of these

xvii) An immune deficiency condition is called _____

a) DiGeorge syndrome b) Down's syndrome

c) Sickle cell anaemia d) SLE

xviii) Cytokines produced by virally infected cells are called _____

a) interferons b) chemokines

c) interleukins d) IL-42

xix) _____ is a secondary lymphoid organ.

a) MALT b) Spleen

c) Lymph node d) All of these

xx) The ability of a material to induce an immune response is referred to as _____

a) Immunogenicity b) Immunogens

c) Antigenic determinants d) Immunologic specificity

PART – II

Attempt **any four (4)** questions from Part **II** :

2. Write in detail on “Major Histo-compatibility Complex (MHC) of human being”. **20**

3. Write in detail on “Functions of cytokines in : **20**
   a) Growth and differentiation
   b) Immune response
   c) Wound healing
   d) Chemotaxis and
   e) Inflammation process”.

4. Write essay on “Humoral and cell mediated immune response”. **20**

5. Write in short on **any two** of the following : **20**
   a) HLA typing
   b) Innate immunity
   c) Rheumatoid arthritis.

6. Write short notes on **any four** of the following : **20**
   a) Tumour markers
   b) General properties of cytokines
   c) Antibody diversity
   d) Macrophage
   e) Natural killer cells
   f) Differentiate between active and passive immunity.

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SLR-VO – 14

Seat No.	

M.Sc. (Semester – IV) Examination, 2014
MICROBIOLOGY (Paper – XIV)
Bioinformatics and Biometry

Day and Date : Thursday, 24-4-2014 Total Marks : 100

Time : 3.00 p.m. to 6.00 p.m.

Instructions** : 1) Part **I,** Q. **1** is **compulsory.

*2) Attempt **any four** question from Part **II.***

*3) Figures to the **right** indicates **full** marks.*

*4) Answer to the Part **I** and Part **II** are to be written in **same** answer booklet only.*

PART – I

I. A) Rewrite the sentences after choosing the correct answer from the given alternatives : **10**

1) BLAST is short form of basic local sequence alignment search tool proposed by _____

1) Elal Johnson 2) Eldler

3) Altchul 4) Needleman

2) _____ and _____ fluor dyes are used in DNA micro array.

1) Acridine orange and ethidium bromide

2) Cytrolinered and chromose blue

3) Cy 5 and Cy 3

4) Cy 8 and Cy 1

3) A _____ , a mathematical relationship used to determine how the structural features of a molecule are related to biological activity.

1) QSAR 2) Chem. Finder

3) Rasmol 4) Chime

P.T.O.

4) _____ is an excellent online resources for information on molecular pathways.

1) Entrez 2) KEGG

3) Secondary databases 4) QSAR

5) _____ is a probabilistic statistical model used in sequence analysis where the probability of each nucleotide preceding it.

1) Markov model 2) Robert model

3) Needleman model 4) Wunsch model

6) _____ is a recent convention for the unambiguous presentation of micro array data.

1) MAIML 2) MIAME

3) MAME 4) MAVE

7) The program is Rasmol is written by _____ is perhaps the best known viewer for macromolecule structures.

1) Rogermore 2) Roger Sayle

3) Roger Waunch 4) Roger Demack

8) In the _____ the distance is calculated as a simple average because candidate is weighed equally.

1) UPGMA 2) WPGMA

3) WGPMA 4) NJ

9) _____ is a data retrieval tool maintained by Kyoto university and the university of Tokyo which covers more than 20 databases and is associated with KEGG.

1) NCBI 2) EMBL

3) DBGET 4) DDBJ

10) _____ is the universal repository for protein structural data obtained by X-Ray crystallography.

1) PDI 2) PDB

3) Swiss PROT 4) PERL

B) Define the following OR explain : **10**

1) EXPASY
2) F test
3) Null hypothesis
4) Regression
5) Confidence interval.

PART – II

Answer **any four** of Part II.

2. Write an essay on ANOVA. **20**

3. Write an essay on use of bioinformatics in major research areas. **20**

4. Give an account on role of bioinformatics in taxonomy and phylogeny. **20**

5. Write short answers of **any two** from the following : **20**

A) How to search and use databases with special reference to pubmed, pubmed central public library of sciences.

B) Write short note on chemoinformatics.

C) Write short note on collection and presentation of data.

6. Write short note on **(any 4)** : **20**

1) Central tendency
2) Probability
3) Frequency distribution
4) Genomics
5) Prediction of 3D protein structure
6) Probabilistic models and associated algorithms.

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SLR-VO – 15

Seat No.	

M.Sc. – II (Semester – IV) Examination, 2014
MICROBIOLOGY (Paper – XV)
Waste Management Technology

Day and Date : Saturday, 26-4-2014 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions *: 1) Part – **I** Question **1** is **compulsory**.*
*2) Attempt **any four** questions from Part – **II**.*
*3) Figures to the **right** indicate **full** marks.*
*4) Answers to the Part – **I** and Part – **II** are to be written in **same** answer book **only**.*

PART – I

1. Rewrite the following sentences by selecting correct answer from given alternatives : **20**

i) Generally sulfite waste liquor contain _____ % of lignin.
a) 10 – 15 b) 30 – 40 c) 50 – 60 d) 70 – 80

ii) _____ are responsible for bulking of sludge in industrial waste treatment.
a) Viruses b) Fungi c) Protozoa d) Rickettsia

iii) The strength of sewage is measured by _____
a) COD b) TOC c) TIC d) BOD

iv) The temperature of distillery waste (spent wash) at the time of discharge is _____ °C.
a) 70 – 90 b) 50 – 60 c) 30 – 40 d) 10 – 20

v) The ISI tolerance limit of BOD for industrial effluent discharged into public sewer is _____ mg/L.
a) 30 b) 50 c) 250 d) 500

vi) In activated sludge process, the floc formation is enhanced by _____
a) Proteins b) Lipids c) Metal ions d) Metalloids

P.T.O.

vii) El Ni no effect is observed in _____

a) Oceans b) Lakes c) Rivers d) Ponds

viii) _____ method have been popularly used for the sludge dewatering in industrial waste treatment.

a) Sludge drying beds b) Effluent treatment

c) Trickling filter d) Vacuum filtration

ix) In water tracing techniques _____ is used as a visible tracer.

a) Azo dyes b) Vat dyes

c) Fluorescent dyes d) Acid dyes

x) The flocculation process is used for _____ separation in industrial waste treatment.

a) Liquid-solid b) Solid-solid

c) Liquid-Liquid d) None of these

xi) The major gas in atmosphere responsible for green house effect is _____

a) SO_2 b) O_3 c) NO_2 d) CO_2

xii) The lake poor in nutrients is _____ lake.

a) Mesotrophic b) Oligotrophic

c) Eutrophic d) All of these

xiii) The waste water generated by _____ industry is called spent wash.

a) Textile b) Paper and pulp

c) Cyanide d) Distillery

xiv) _____ type of earthworms are widely used for vermicomposting.

a) Eudrilus eugine b) Esenia foetida

c) Rubella lumbricus d) Euglena eugine

xv) Stratospheric zone is very important because it acts as _____

a) Virus filter b) Dust filter

c) U.V. filter d) Bacteria proof filter

xvi) _____ is the primary technique used in gathering audit information.

a) Audit interviews b) Documentation

c) Public disclosure d) Audit protocol

xvii) After entry of waste in river, there is formation of zone called _____ zone.

a) Oligo b) Meso c) Poly d) α

xviii) _____ method is generally used for industrial waste treatment by GEM.

a) Bioaugmentation b) Bioaccumulation

c) Biofilter d) Biofilm

xix) Decreased level of _____ in water enhances the toxicity of H_2S.

a) CO_2 b) O_2 c) N_2 d) CO

xx) Zoogloea ramigera organism play an important role in _____ process for floc formation.

a) Activated sludge b) Anaerobic sludge

c) Oxidation ponds d) Septic tank

PART – II

2. Write an essay on 'Eutrophication'. **20**

3. Write in detail characteristics and treatment of Textile industry waste water. **20**

4. Write on types and characterization of industrial wastes. **20**

5. Write short answers (**any two**) : **20**

   a) Critical operating parameters – DO and HRT.

   b) Water tracing.

   c) Genetically engineering microorganisms preservation and application.

6. Write short notes on (**any four**) : **20**

   a) Global warming

   b) Characteristics of cyanide waste

   c) Vermicomposting

   d) EA

   e) Bioaugmentation

   f) Enzyme and pollution.

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SLR-VO – 16

Seat No.	

M.Sc. (Part – II) (Semester – IV) Examination, 2014
MICROBIOLOGY (Paper – XVI)
Agricultural Microbiology

Day and Date : Tuesday, 29-4-2014 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

Instructions : *1) Part **I**, Q. **1** is **compulsory**.*
*2) Attempt **any 4** questions from Part **II**.*
*3) Figures to the **right** indicate **full** marks.*
*4) Answer to the Part – **I** and Part – **II** are to be written in **same** answer booklet **only**.*

PART – I

1. A) Rewrite the sentences after choosing the correct answer from the given alternatives : **10**

1) 'Cry' protein is produced by _____
   a) *Bacillus popilliae* b) *Bacillus sphaericus*
   c) *Bacillus thuringiensis* d) *Bacillus cereus*

2) The oxidation of ammonia to nitrite is carried out by _____ species.
   a) Nitrosomonas
   b) Nitrosococcus
   c) Nitrobacter
   d) Both nitrosomonas and nitrososcoccus

3) Heterocysts are present _____
   a) Frankia b) Blue green algae
   c) Azotobacter d) Rhizobium

4) Fogg's medium is used for the isolation of _____
   a) *Frankia* b) *Cyanobacteria*
   c) *Azotobacter* d) *Rhizobium*

P.T.O.

5) Green and purple sulfur bacteria use _____ as electron donors in photosynthetic reduction of CO_2 to carbohydrates
   a) H_2S
   b) H_2O
   c) Organic compounds
   d) Inorganic compounds

6) The organic matter content of soil is approximately _____%.
   a) 10 – 15 b) 3 – 5 c) 40 – 45 d) 25 – 30

7) Water and air together account for approximately _____% of the total volume of soil.
   a) 10 b) 5 c) 50 d) 30

8) White colour of the soil is due the presence of _____
   a) Hydrated iron oxide
   b) Unhydrated iron oxide
   c) Carbonates
   d) Iron sulphides and manganese oxides

9) 'Cry' protein is activated by _____ enzyme in the midgut of susceptible larvae.
   a) Lipase b) Amylase
   c) Protease d) Phosphatase

10) The conversion of molecular nitrogen to ammonia is known as _____
   a) Nitrogen fixation b) Nitrification
   c) Ammonification d) Denitrification

B) Attempt the following questions : **10**

1) Define the term 'Town compost and Village compost'.
2) Give the advantages of green manure.
3) Define 'Phosphorous mineralization and Phosphorous immobilization'.
4) List the nitrogen fixing algal species.
5) Define 'Assimilatory nitrate reduction'.

PART – II

2. Describe in detail the large scale production of bacteria bioinsecticide by using *Bacillus thuringiensis*, its formulation and methods of application. **20**

3. Give the detailed account of carbon cycle and its significance in the environment. **20**

4. Describe the types, techniques and applications of plant tissue culture. **20**

5. Attempt **any two** of the following : **20**
   a) Explain the production and methods of applications of vermicompost.
   b) Discuss the chemistry and mode of action of bacterial and fungal toxin on pests.
   c) Describe role and status of biopesticides in pest control.

6. Write short notes on **any four** of the following : **20**
   a) Phosphorous cycle
   b) Siderophores
   c) Composition and significance of root exudates
   d) Mycorrhizae as a biofertilizer
   e) Physical properties of soil
   f) Green manure.

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SLR-VO – 6

Seat No.	

M.Sc. – I (Semester – II) Examination, 2014
MICROBIOLOGY (Paper – VI) (New CGPA Pattern)
Microbial Physiology and Metabolism

Day and Date : Thursday, 24-4-2014 Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

N.B. *: 1) Section – **I** is **compulsory**.*
*2) From Section – **II** attempt **any four**.*
*3) **All** questions carry **equal** marks.*
*4) Figures to the **right** indicate **full** marks.*
*5) **Draw** neat and labelled **diagrams**.*

SECTION – I

1. Rewrite the following sentences by using correct alternatives : **14**

1) In anaerobic respiration terminal electron acceptor is _____

a) O_2 b) NO_3
c) Pyruvic acid d) Succinic acid

2) _____ carry electrons in respiratory electron transport system.

a) NAD b) Co-enzyme
c) Flavoprotein d) Cytochrome

3) Peroxidase catalyzes conversion of H_2O_2 to _____

a) H_2 and O_2 b) H_2 and $\frac{1}{2}O_2$
c) H_2O and $\frac{1}{2}O_2$ d) H_2 and O_2^-

4) _____ is precursor for purine and pyrimidine synthesis.

a) Phosphoribosyl amino imidazole.
b) Phosphoribosyl glycinamide
c) Phosphoribosyl carboxyamide
d) Phosphoribosyl pyrophosphoric acid

P.T.O.

5) _____ phosphate molecules are taken up for NAD linked electron transport chain.

a) 1 b) 2

c) 3 d) 4

6) _____ are the channel proteins involved in transport across cell membrane.

a) Prostaglandins b) Porins

c) Porphyrins d) Interleukins

7) _____ shows similarities with probable ancestor of mitochondria.

a) Diplococcus b) Micrococcus

c) Paracoccus d) Mixococcus

8) A revolving door model of active transport has been proposed to explain passage of _____ through cell membrane.

a) Glucose b) Maltose

c) Galactose d) Lactose

9) Phycobilins are water soluble open chain _____

a) Tetraphytols b) Phytols

c) Tetra pyrroles d) Octapyrroles

10) _____ can takes place across the concentration gradient and requires energy.

a) Simple diffusion b) Passive diffusion

c) Facilitated diffusion d) None of these

11) Cytochromes are _____

a) Lipids b) Carbohydrates

c) Fats d) Proteins

12) TCA cycle is a major route of ATP generation in _____

a) Chemolithotrophs b) Chemoheterotrophs

c) Phototrophs d) Chemoautotrophs

13) Cytochrome pattern of _____ changes as growth phases changes.

a) Arthrobacter b) Acetobacter

c) Azotobacter d) Aeromonas

14) _____ enzyme is involved in aspartate synthesis from oxaloacetate.

a) Glutamate aspartate transaminase

b) Glutamine aspartate transaminase

c) Oxaloacetate aspartate transaminase

d) Aspartic acid transaminase

SECTION – II

Attempt **any four** :

2. Write an essay on 'transport mechanism'. **14**

3. Write in detail Denovo synthesis of purines. **14**

4. Write an essay on 'TCA cycle'. **14**

5. Write in detail about 'Bacterial electron transport chain'. **14**

6. Answer **any two** of the following : **14**

   i) Mechanism of oxygen toxicity

   ii) Reverse osmosis

   iii) Microbial response to stress.

7. Answer **any two** of the following : **14**

   i) Explain in detail about peroxidase and superoxide dismutase.

   ii) Write on synthesis of fatty acids.

   iii) Explain in detail role of pyruvate dehydrogenase in TCA cycle.

_____

SLR-VO – 7

Seat No.	

M.Sc. – I (Semester – II) Examination, 2014
MICROBIOLOGY (New) (C.G.P.A. Pattern)
Biophysics and Bioinstrumentation (Paper – VII)

Day and Date : Saturday, 26-4-2014 Max. Marks : 70
Time : 11.00 a.m. to 2.00 p.m.

N.B. *: 1) Part – **I** question **1** is **compulsory**.*
*2) Attempt **any four** questions from Part – **II**.*
*3) Figures to the **right** indicate **full** marks.*
*4) Answer to the **two** Parts should be written in the **same** answer book.*

PART – I

1. Rewrite the following sentence by selecting the correct answer from given alternatives. **14**

1) In X-ray tube _____ is used as electron source.
   a) Anode b) Cathode
   c) Grid d) Lead
2) Optical rotation measurement is denoted by letter _____
   a) β b) γ
   c) α d) ϕ
3) The source of wavelength used in Raman spectroscopy is _____
   a) Mercury lamp b) Cathod lamp
   c) Tungsten lamp d) u.v. lamp
4) In u.v. – VIS spectroscopy the source of u.v. light is _____ lamp.
   a) Tungsten b) Deuterium
   c) Hydrogen d) Mercury
5) In mass spectrometry separation of molecule is based on their _____
   a) Mass b) Charge
   c) Mass to charge ratio d) Length

P.T.O.

6) First step in atomic absorption spectroscopy is _____
   a) Ionization b) Chemical treatment
   c) Sublimation d) Nebulization
7) Northern blotting technique is used for detection of _____
   a) DNA b) RNA
   c) Protein d) Carbohydrate
8) 3_H is weak _____
   a) γ-emitter b) α-emitter
   c) electron d) β-emitter
9) The glass electrode contain _____ solution.
   a) 0.1 M HCl b) 1M HCl
   c) 1M KCl d) 10 mM HCl
10) Combined electrode consist of _____
   a) glass and reference electrode
   b) glass electrode
   c) reference electrode
   d) mercury electrode
11) Tertiary structure of protein is maintained by _____
   a) peptide bond b) hydrogen bond
   c) di-sulphide bond d) all of the above
12) Which of the following technique involves the separation of antigen based on their sizes and electrical charges _____
   a) radial immunodiffusion b) immuno electrophoresis
   c) agglutination d) immuno filtration
13) _____ are amplified in photomultiplier tube.
   a) photon b) electron
   c) proton d) positron
14) 35_s and 14_c are weak _____
   a) α-emitters b) β-emitters
   c) γ-emitters d) positron

PART – II

Attempt **any four** questions :

2. Explain the principle, instrumentation and application of X-ray crystallography. **14**

3. Why atom shows radio activity ? Take detailed account of autoradiography. **14**

4. What is Beer and Lamberts Law ? Explain the principle, and working of u.v. – VIS spectrometer. **14**

5. Write short answer (**any two**) : **14**
   a) Explain the principle and working of pH meter.
   b) Describe the chemical properties of amino acid and proteins.
   c) Explain the principle and application of fluorescence immuno assay.

6. Write short note on (**any two**) : **14**
   a) Circular dichroism.
   b) Compare and contrast turbidometry and nephalometry.
   c) 3D structure determination by X-ray diffraction.

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SLR-VO – 8

Seat No.	

M.Sc. – I (Semester – II) Examination, 2014
MICROBIOLOGY (New)
(C.G.P.A. Pattern)
Microbial Ecology and Diversity (Paper – VIII)

Day and Date : Tuesday, 29-4-2014 Max. Marks : 70
Time :11.00 a.m. to 2.00 p.m.

N.B. : *I) Part – **I**, question **1** is compulsory.*
*II) Attempt **any four** questions from Part – **II**.*
*III) Figures to the **right** indicate **full** marks.*
*IV) Answers to the **two** Parts should be written in the **same** answer book.*

PART – I

1. Rewrite the following sentences by selecting the correct answer from given alternatives : **14**

1) Association between fungi and the roots of higher plant is _____
   A) Lichen B) Mycorrhiza
   C) Mycoplasma D) Root nodule

2) _____ are cell wall-less bacteria.
   A) Actinomycetes B) Nocardia
   C) Mycoplasma D) Mycobacteria

3) _____ are often present in anaerobic, hyper saline or high temperature environments.
   A) Archaeobacteria B) Algae
   C) Mycoplasma D) Fungi

4) Symbiotic association consisting of a specific fungus and algae is _____
   A) Mycoplasma B) Lichen
   C) Nodule D) Cyanellae

P.T.O.

5) Magnetosomes are responsible for _____
   A) Chemotaxis B) Aerotaxis
   C) Magnetotaxis D) Phototaxis

6) Ability of cyst formation on nitrogen-free medium can be shown by _____
   A) Candida B) Azotobacter
   C) Bacillus D) Rhizobium

7) The study of microbial relationships with other organisms and with their non-living environment is _____
   A) Microbial Ecology B) Microbial Genetics
   C) Microbial Physiology D) Microbial Metabolism

8) Endolithic microorganisms are found in _____
   A) Rumen
   B) Root nodules
   C) Stem nodules
   D) Cracks and cavities in the rock

9) Dimorphism is found in _____
   A) Candida B) Protozoa
   C) Algae D) Viruses

10) The ability of microorganisms to communicate and co-ordinate by the use of chemical signal molecules is called _____
   A) Phototaxis B) Aerotaxis
   C) Communication D) Quorum sensing

11) Nitrogen fixation depends on the _____ enzyme system.
   A) Protease B) Nitrogenase
   C) Amylase D) Cellulase

12) Organisms which contain both chlorophyll A and B and carry out oxygenic photosynthesis are _____
   A) Diazotrophs B) Nondiazotrophs
   C) Prochlorales D) Archaeobacteria

13) Infectious agent comprising small, protein free, circular, single strandard RNA is _____

A) Cyst B) Bacteroid

C) Prion D) Cynobacterium

14) The process in which organic matter is decomposed to release simple inorganic compound is called _____

A) Mineralization B) Immobilization

C) Assimilation D) Transmission

PART – II

Attempt **any four** questions :

2. Explain in detail anoxygenic photosynthetic bacteria. **14**

3. Describe in brief general characteristics of archaeobacteria. **14**

4. Describe in detail microbe-plant interactions with examples. **14**

5. Describe in brief (**any two**) : **14**

   a) Control of biodeterioration

   b) Bioluminescence

   c) Halophilic bacteria.

6. Write short notes on (**any two**) : **14**

   a) Bioleaching

   b) Microbial fossils

   c) Xenobiotics.

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SLR-VO – 9

Seat No.	

M.Sc. (Part – II) (Semester – III) Examination, 2014
MICROBIOLOGY (Paper – IX)
Molecular Biology and Genetic Engineering

Day and Date : Monday, 21-4-2014 Max. Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

N. B. : *1) Part – **I** question – **1** is **compulsory**.*
*2) Attempt **any four** questions from Part – **II**.*
*3) Figures to the **right** indicate **full** marks.*
*4) Answers to the **two** Parts should be written in the **same** answer book.*

PART – I

1. Rewrite the following sentences by selecting the correct answer from given alternatives : **20**

i) The spontaneous nature of mutation in bacteria was discovered by _____

a) Lederberg b) Tatum
c) Luria and Delbruick d) Watson

ii) _____ is an example of physical mutagen.

a) NTG b) Acridine dyes
c) ETBr d) U.V.

iii) The transformation in bacteria was discovered by _____

a) Griffith b) Lederberg
c) Tatum d) Zinder

iv) _____ introduced pBR series of plasmids.

a) Bolliver and Rous b) Boyd and Rodriguez
c) Bolliver and Rodriguez d) Bolliver and Roston

v) _____ is an example of ssDNA phage vector.

a) T2 b) T4
c) M13 d) Lambda

P.T.O.

vi) _____ enzyme is used in construction of rDNA by homopolymer tailing method.

a) Bet-galactosidase b) Terminal transferase
c) Permease d) Protease

vii) _____ methodology is used in protein engineering technique.

a) UV mutagenesis b) Site directed mutagenesis
c) Transposon mutagenesis d) ETBr mutagenesis

viii) In the pUC series of plasmid vectors 'UC' stands for _____

a) Uni of Cuttak b) Union Carbide
c) Uni of Canada d) Uni. of California

ix) _____ is an example of biological mutagen.

a) Tn-5 b) ETBr c) NTG d) 5Bru

x) Mutagenicity test is known as _____ test.

a) Elek b) Widal c) Ames d) Weil-Felix

xi) The fluctuation test was performed by _____

a) Luria and Delbruck b) Lederberg
c) Mullis d) Maxam

xii) Bacterial conjugation was discovered by _____

a) Beadle b) Griffith
c) Lederberg ad Tatum d) Zinder

xiii) _____ is not an example of site specific restriction enzyme.

a) EcoRI b) Hindiii c) BamHi d) EcoK

xiv) Use of _____ is an example of non-radioactive labeling of DNA.

a) C14 b) N15
c) H3 d) Avidin-Biotin system

xv) The Dideoxy method of DNA sequencing was devised by _____

a) Sanger b) Crick
c) Maxam and Gilbert d) Mullis

xvi) _____ host is commonly used in genetic engineering.

a) *M. tuberculosis* b) *E. aerogenes*
c) *E.coli-K12 X1776* d) *S. typhi*

xvii) PCR technique was developed by _____

a) Kary Mullis b) Hershey c) Sanger d) Gilbert

xviii) Signal hypothesis describes protein _____

a) Sequencing b) Digestion c) Synthesis d) Transporting

xix) Transduction was discovered by _____

a) Griffith b) Zinder and Lederberg

c) Tatum d) Crick

xx) Nitrogenase enzyme converts N_2 to _____

a) NO_2 b) NO c) NH_3 d) NO_3

PART – II

Attempt **any four** questions :

2. What are genomic and cDNA libraries ? Compare and contrast in detail. **20**

3. What is protein engineering ? Describe methodology and applications. **20**

4. What is conjugation ? Describe important features of conjugation process and its significance. **20**

5. Write short answers (**any two**) : **20**

   i) What is site directed mutagenesis ? Describe oligonucleotide based site directed mutagenesis..

   ii) Describe with example different methods of construction of radiolabeled probes.

   iii) Restriction and modification and their significance.

6. Write short notes on (**any four**) : **20**

   i) pBR 322 plasmid vector

   ii) $CsCl_2$ density gradient centrifugation

   iii) Nick translation

   iv) Neoplastic transformations

   v) C-value paradox

   vi) Homopolymer tailing technique.

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